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Combat Crew

Strategic Air Command

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JUNE 1986
★★★★

MOTIVATIONAL LEADERSHIP

"Forty and Forward" is more than just a trendy slogan for 1986 — SAC's 40th anniversary. "Forty and Forward" is a sign of the times — B-1B bombers and Peacekeeper missiles entering our inventory, KC-10s supporting global operations such as the recent strike on Colonel Khadafy's terrorist sanctuaries, re-engined KC-135Rs dotting our ramps, and Small ICBM and Advanced Technology Bomber study groups working to define future operational concepts.

Over the past few months, I've gained a great appreciation and admiration for the tremendous job that you're doing, day in and day out, sometimes under trying circumstances. Your positive "Can Do" attitude has convinced me that SAC operators — both missile and aircrews — exemplify the highest standards of Air Force professionalism and the "Warrior" spirit. "Forty and Forward" challenges us to endeavor for continued excellence and improvement — not just field and operate new systems — but also move forward in how we lead and motivate our people.

The need for solid, effective leadership is nothing new; however, what has become more obvious is the need for honest-to-goodness-get-away-from-the-desk leadership — not technical management expertise. Admittedly, management skills derived from sound job knowledge and experience are an essential element of leadership, but there are other elements that cannot be ignored. Consider for example: charisma, interpersonal skills, and most importantly, personal credibility. Effective leaders come with these elements merged into a cohesive package. The essence of charisma is not so much a commanding presence as it is the knack of making folks feel good about doing an unpleasant task. Interpersonal skills are best characterized by the old Lakota Indian proverb: "Don't criticize others until you've walked a mile in their moccasins." The most vital overriding element of strong leadership is personal credibility. While hard to concretely define, it is the sum of your personal integrity, honor, dedication, and self-sacrifice. The unique aspect of credibility is that people know whether you have it or not and, if you've lost it, you're not likely to get it back.

Leaders who live by these principles are naturally inclined to provide the quality training and the resources their people need to get the job done. The training is timely and the resources are provided without interruption to locations where they're needed. Good leaders look for ways to work smarter, not harder, and they inspire their people to do likewise. Along with working smarter, today's real leaders continually strive to provide a superior work environment that underwrites motivation through pride, esprit, and professionalism.

Goal-setting is another big motivator found in successful organizations. In the military in general, and specifically in SAC, goals must be tied to the mission. However, goals must do more than simply state the mission — they must establish and explicitly define measurable, attainable objectives. It's no secret that goals set at the lowest working level maximize productivity. People charged with attaining goals share ownership and have a stake in the system when they are involved in the goal-setting process. Goals should be set with a result in mind rather than as a recipe or "how to" checklist, and they must be advertised so everyone knows what is expected. Finally, results should be publicized in relation to the standards and achievers rewarded to reinforce their performance.

The real key to motivation oriented leadership involves placing responsibility and authority at the lowest possible level. That's a tough order that we're coming to grips with here at the Headquarters. For far too long, we've been lulled by the comfort of over centralization and its companion — micromanagement. We're working hard to turn this around and we're making progress. For example, one of our most recent efforts was to reduce unit "stressors" such as unnecessary staff assistance visits and inspections. We've eliminated some SAVs and inspections, consolidated some, and extended the cycle of others. Meanwhile, we're also critically examining the amount of published guidance in an effort to weed out the redundant and the unnecessary.

I'm optimistic that we're on the right track, but I'm also sure there is much more to be done — and you can help. By working together, we can motivate each other to work smarter. If you don't think we're working smart here, let us know about it. Tell us what you need to get the job done better. If we need to "rock the boat" to get results for you, then that's what we'll do. The bureaucratic "we've always done it that way" syndrome doesn't cut it in SAC anymore. SAC combat crew members are the best — and so are our maintainers and support personnel — but we're not about to collect any dust on our laurels. As we celebrate SAC's 40th anniversary, we can take great pride in the dynamic advances in our weapon system and equipment. What better occasion, then, to make similar strides in how we lead and motivate our people? We've made a good start. **Press on with vigor!** ★★

Maj Gen H.T. Johnson
HQ SAC, DO

Combat Crew

SACRP 127-1 VOL. XXXVI NO. 6 JUNE 1986

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ON OUR COVER

Pre-flight activity on a B-1B at Dyess AFB. For the most recent information on the B-1B aircrew selection process, please turn to page 4.

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FORTY & FORWARD

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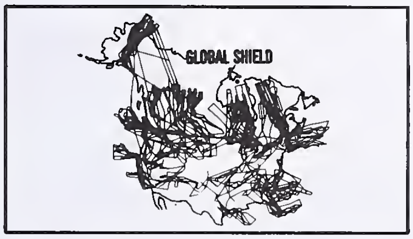

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Next Month . . .
Combat Crew helps America celebrate 210 years of independence with its **Fourth of July** issue.

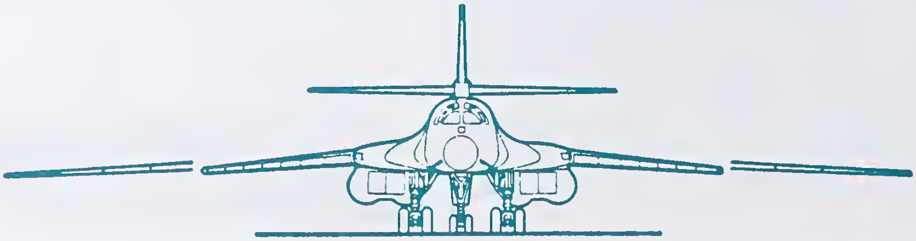
B-1B Aircrew Selection

New Criteria . . . New Philosophy

Maj John Priecko
HQ SAC/DPROR

Revised B-1B aircrew selection criteria and a new manning philosophy are providing a better balance of experience between the B-1B and B-52. The key word is "balance." The new criteria was approved by CINCSAC in December 1985 and began with the Ellsworth B-1B aircrew selections. It changes SAC pilot entry requirements from 1800 to 1250 total hours with similar reductions for all other crew positions. Along with the new requirements, stratification (selecting a predetermined number of individuals from each year group) has also been integrated to spread the loss of B-52 experience and build a younger, better structured B-1B crew force.

The combined positive benefits of reduced entry criteria and stratification are already improving B-52 experience levels and reducing the large number of B-52 instructors going to the B-1B. The new criteria and philosophy are manning the B-1B with highly qualified aviators and retaining good, experienced flyers in the B-52. This approach will be used for Grand Forks, McConnell and to complete the B-1B



If you're going to Dyess and the B-1B, these structures will become very familiar. In the foreground is the Flightline Operations Building which houses mission planning rooms, administrative and instructor crew offices. Behind it, Davis Hall contains the facilities for computer based instruction, academic classrooms, and the B-1B Engineering Research Simulators.

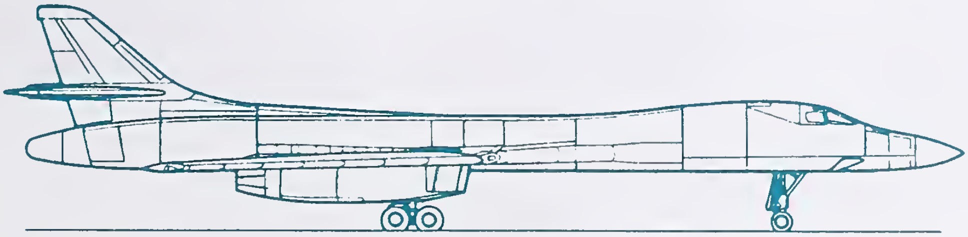
operations squadron at Dyess. Those comprehensive three-phase efforts will closely resemble previous B-1B aircrew selections, both in timing and process.

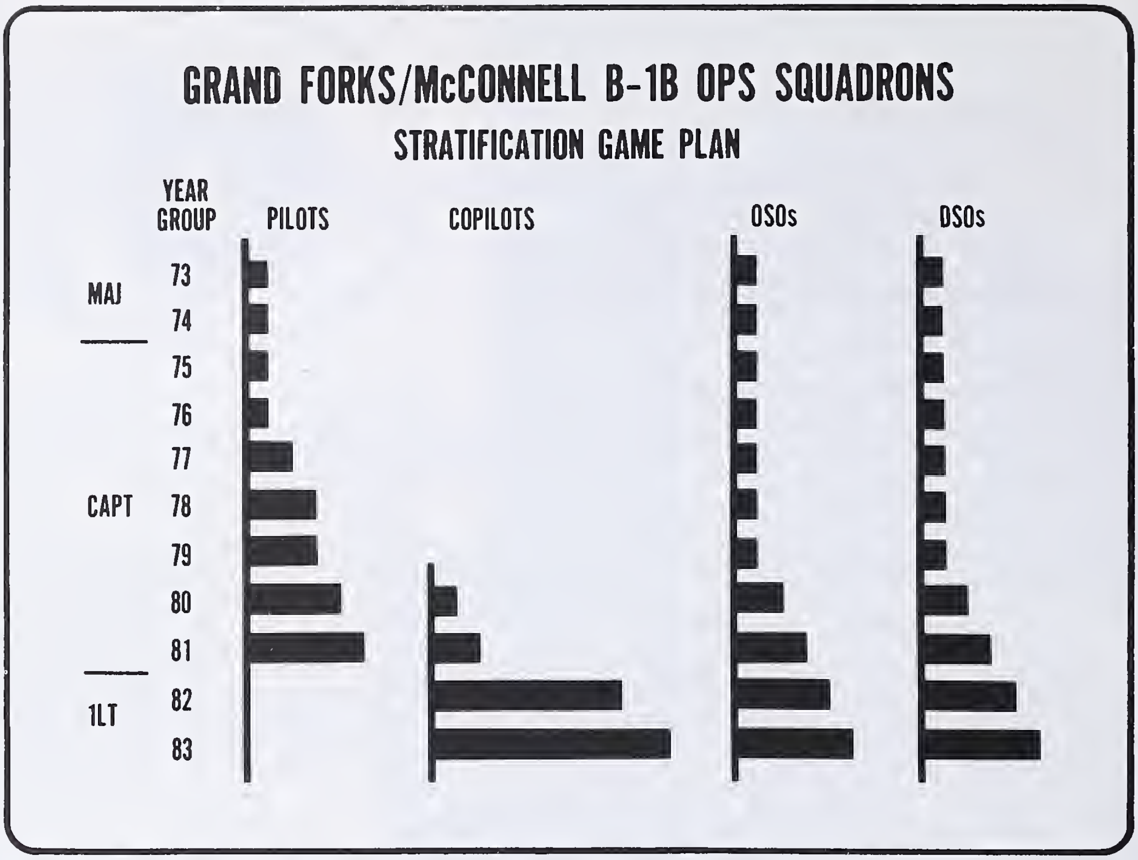
Phase 1 (Grand Forks, 20 Jun - 27 Jul 86; McConnell/Dyess, 15 Oct - 14 Nov 86) is identification of eligibles. Candidates will be determined using an objective computer program based on the selection criteria and AF Form 90 volunteers for B-1B duty. Units will provide HQ SAC with standardization/evaluation flight records on every candidate.

The high level of activity on the flightline at Dyess continues. Along with the ongoing, intensive aircrew training, maintenance personnel are also putting in long hours becoming well versed in every aspect of the B-1B.

While the flightline at Grand Forks still doesn't give much indication of what's in store, a wealth of base-wide construction projects have already begun or will soon be underway. The picture won't be quite the same when the first B-1B touches down in September 1987.

B-1 Photos by Maj John Priecko





Along with revised criteria, stratification has also been integrated into B-1B aircrew selection. The intent is to reduce the draw on B-52 experience and build a quality, younger, maturely structured B-1B crew force. While the actual numbers will be adjusted based on the candidate population and the screening process, the concept will remain. You'll be competing for a finite number of positions by year group and crew speciality.

Phase II (Grand Forks, 28 Jul - 24 Aug 86; McConnell/Dyess, 15 Nov - 14 Dec 86) focuses on quality control as records are closely reviewed. Just as before, the selection process will involve a "whole officer" approach with primary emphasis on aviator skills, duty performance and potential.

Phase III (Grand Forks, 25 Aug - 3 Oct 86; McConnell/Dyess, 15 Dec 86 - 1 Feb 87), records screening and scoring, resembles the current FB-111 and KC-10 aircrew selections where flying records are the key to success. Candidates will be competing for a finite number of slots by year group and crew position. Basically, the B-1B crew force is being built like the overall rated force with larger numbers of younger officers selected in comparison to higher time, more experienced personnel. The driving factor is balancing requirements among SAC's airborne weapon systems.

Names of the Grand Forks selectees should be announced in October 86

Things may look like business as usual and a January 1988 B-1B arrival may still sound like a long way off, but the pace is on a certain upswing. McConnell is the fourth B-1B base and is unique in that it's the only location which doesn't have bombers currently assigned. The result is more work, more construction, and a greater concerted effort by all.

and McConnell/Dyess in February 87. Grand Forks crews will report for training at Dyess from February through August 87; McConnell crews from July through December 87; Dyess in January and February 88. A total of 49 crews will be selected (21 each for Grand Forks and McConnell and 7 crews to fill out the Dyess ops squadron). Dyess will provide two experienced crews (less copilots) for Grand Forks and two for McConnell to become the core of B-1B flying expertise at each base. Additionally, individuals and alternates will be identified to backfill B-1B CCTS flightline, academic instructor and curriculum development manager positions.

In summary, the carefully considered task of manning the B-1B remains on track. The revised aircrew selection criteria and stratification will assist in continuing to build a mature, sustainable B-1B rated force while maintaining the integrity and stability of B-52 manning.

B-1B AIRCREW SOURCING GRAND FORKS/McCONNELL (21 CREWS EACH)

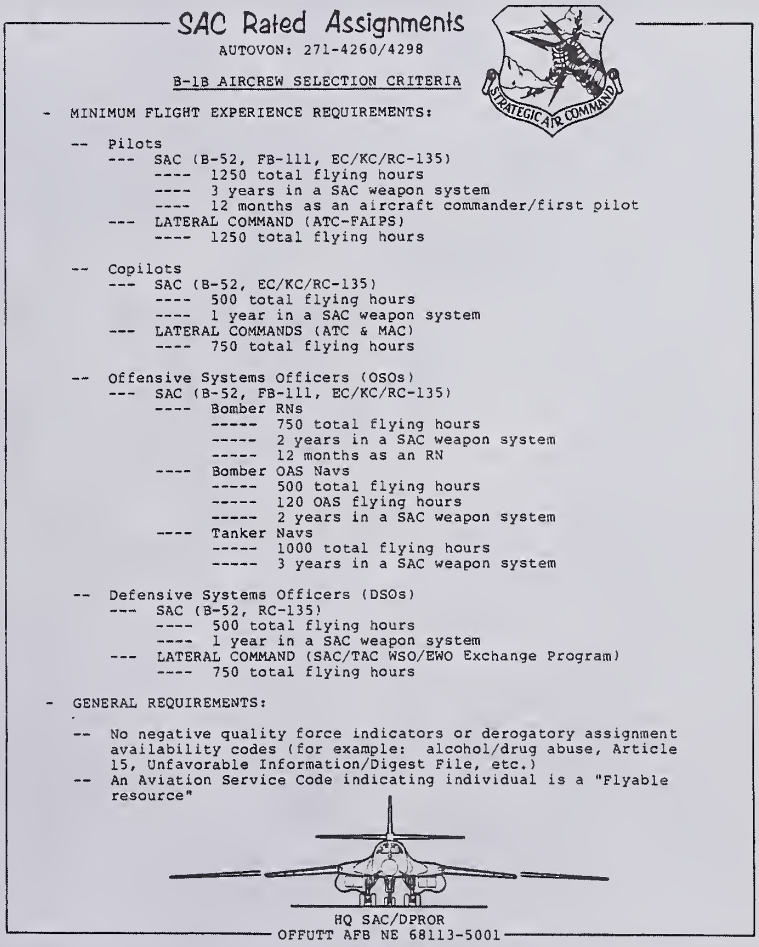
AIRCRAFT COMMANDERS		COPILOTS	
B-52	13	B-52	12
EC/KC/RC-135	3	EC/KC/RC-135	3
FB-111	1	MAC	5
ATC FAIP	2	ATC FAIP	1
DYESS B-1B	2		

OFFENSIVE SYSTEMS OFFICERS (OSOs)		DEFENSIVE SYSTEMS OFFICERS (DSOs)	
B-52	15	B-52	17
EC/KC/RC-135	3	RC-135	2
FB-111	1	Dyess B-1B	2
Dyess B-1B	2		

DYESS (7 CREWS)

AIRCRAFT COMMANDERS		COPILOTS	
B-52	6	B-52	6
EC/KC/RC-135	1	EC-KC/RC-135	1

OFFENSIVE SYSTEMS OFFICERS (OSOs)		DEFENSIVE SYSTEMS OFFICERS (DSOs)	
B-52	6	B-52	6
EC/KC/RC-135	1	RC-135	1



SAC Rated Assignments

AUTOVON: 271-4260/4298

B-1B AIRCREW SELECTION CRITERIA

- MINIMUM FLIGHT EXPERIENCE REQUIREMENTS:
  - Pilots
    - SAC (B-52, FB-111, EC/KC/RC-135)
      - 1250 total flying hours
      - 3 years in a SAC weapon system
      - 12 months as an aircraft commander/first pilot
    - LATERAL COMMAND (ATC-FAIPS)
      - 1250 total flying hours
  - Copilots
    - SAC (B-52, EC/KC/RC-135)
      - 500 total flying hours
      - 1 year in a SAC weapon system
    - LATERAL COMMANDS (ATC & MAC)
      - 750 total flying hours
  - Offensive Systems Officers (OSOs)
    - SAC (B-52, FB-111, EC/KC/RC-135)
      - Bomber RNs
        - 750 total flying hours
        - 2 years in a SAC weapon system
        - 12 months as an RN
      - Bomber OAS Navs
        - 500 total flying hours
        - 120 OAS flying hours
        - 2 years in a SAC weapon system
      - Tanker Navs
        - 1000 total flying hours
        - 3 years in a SAC weapon system
  - Defensive Systems Officers (DSOs)
    - SAC (B-52, RC-135)
      - 500 total flying hours
      - 1 year in a SAC weapon system
    - LATERAL COMMAND (SAC/TAC WSO/EWO Exchange Program)
      - 750 total flying hours
- GENERAL REQUIREMENTS:
  - No negative quality force indicators or derogatory assignment availability codes (for example: alcohol/drug abuse, Article 15, Unfavorable Information/Digest File, etc.)
  - An Aviation Service Code indicating individual is a "Flyable resource"

HQ SAC/DPROR
OFFUTT AFB NE 68113-5001

Maj Lynne C. Thompson
HQ SAC/DOODS

The Seeker

Immersed in thought, working a hot package destined for three-letter shotgun coordination, I almost missed the soft, yet compelling invitation. My brain registered the message and I quickly snapped out of my staff officer trance. Like you, I've been searching for the big picture for what seems like forever. Despite constant searching, through units and wings, and even through the hallowed halls of HQ SAC, I still had no clue to its whereabouts.

Quickly, I turned to find the invitation's source. I saw a fleeting blue

suit disappear around the corner. Determined not to let this opportunity escape, I bolted after. His pace quickened. Down some stairs. Around another corner. More stairs. More corners. I dashed to burst through a cypher locked door before it could close behind my curious benefactor.

Finally, I rounded a final corner, shot past a copier, and emerged into a small room. As my eyes adjusted to the darkened light, I saw a coffee pot on my right, on my left a large, full length mirror and next to it, a coat rack.

"Here? In a cloakroom buried in the catacombs beneath the halls of HQ SAC lay the big picture?" I could feel my heart pounding as I drew a deep breath, forcing myself to calmness. I refocused my attention outward. There he was: his back towards me, opening an old safe. Pulling open a drawer, he took something out.

The figure turned, extending a massive document, richly bound in red. I was caught off guard. I'd expected a picture — maybe B-52s with Egyptian pyramids in the background, KC-10s refueling F-15s, or even a diagram with unintelligible hieroglyphics — not a book! Relishing the moment of glory I gazed upon the book's shiny red face: GLOBAL SHIELD 86 Exercise Plan. Unbelieving, I almost dropped the book. GLOBAL SHIELD? Wasn't GLOBAL SHIELD just another in the countless parade of exercises.

Disbelief, frustration and anger welled up within me. How could I have been so trusting? Unconsciously, I lifted the book, perhaps intending to dash it to the floor, but my peripheral vision caught a reflection in the mirror to my left. I turned. What I saw startled me. Instead of a red bound book, I saw reflected the body of Strategic Air Command: the skeleton of logistics and maintenance; the combat muscles of bombers, tankers, missiles, PACCS, and reconnaissance assets; the life blood of trained and motivated personnel; the command control communications nerve system; and the battle staffs providing combat leadership. For the first time, I saw how the interrelated facets were dependent upon each other for successful mission accomplishment.

I looked closer and saw that if the Strategic Air Command's global mission is to succeed, our personnel and equipment must be constantly ready and we need tested and proven plans to direct the coordinated use of those resources. I suddenly realized how it all comes together in the annual test of our combat readiness through the commandwide exercise called GLOBAL SHIELD.

"Here? In a cloakroom buried in the catacombs beneath the halls of HQ SAC lay the big picture?"

"How strange," I thought. "Could there be more?" I looked closer, rotating the book to closely examine all its angles. I found that exercise GLOBAL SHIELD has four basic objectives. First, it gives our aircrews, missile crews, and support people an opportunity for training in critical wartime tasks. Second, since the exercise is controlled from the SAC Command Center, we can evaluate SAC's command control effectiveness from the national civilian leadership, through military channels, to SAC forces around the world, using both ground and airborne communications. I saw the third benefit, the opportunity for people to experience the interrelationship between their jobs and those of others. Finally, I saw how the exercise demonstrates SAC's professionalism, readiness and capabilities.

New awareness seemed to flow faster and faster. I took another breath as the revelations continued to unveil in the mirror. GLOBAL SHIELD consists of several distinct phases, representing as closely as possible the actions that would be necessary in a real emergency. For example, if world tensions developed into a potential threat to the United States, SAC forces would generate to a higher state of readiness to meet the threat. In the GLOBAL SHIELD scenario, exercise generation to simulated full combat status allows us to evaluate how well follow-on forces could supplement the day-to-day alert force.

It made sense. But wait, there was more. A key factor in winning a potential conflict would be the survival of our forces. To enhance their survivability during GLOBAL SHIELD, some of our aircraft and crews are dispersed to other military and selected civilian airfields. By dispersing we gain the use of additional runways, allowing a greater number of aircraft to launch in a given time period. This prevents them from being caught on the ground where they are more vulnerable to attack.

The big picture came into sharper focus. As the GLOBAL SHIELD scenario progresses, SAC aircrews, with air refueling support from active, Reserve, and Air National Guard units, fly simulated airborne alert missions in several preplanned orbit areas. These airborne sorties provide training in precision navigation, aerial refueling, and command control procedures. After the simulated airborne alert is completed, many aircrews continue a normal training mission and return to their home bases.

It all made sense. During this phase, Minuteman and Titan missile crews conduct system tests and communications exercises to ensure their readiness for simulated launch orders.

When the exercise scenario reaches the appropriate stage, bombers, tankers and command control aircraft flush launch under simulated positive control to survive a simulated attack on the United States. Active duty tanker crews are joined by SAC-gained Air Force Reserve and Air National Guard forces. A simulated execution order is sent and after verifying the authenticity of the order, SAC ICBM crews simulate launching their missiles while bomber crews begin penetration of simulated enemy defenses to strike hypothetical targets. These bomber sorties fly on designated low level routes to provide realistic training over the kinds of terrain crews would encounter on actual penetration missions.

The crystal clarity of it all took my breath away! What's this! There's more? Throughout this phase of the exercise, SAC reconnaissance aircraft fly bomb damage assessment missions and specially configured EC-135s test SAC's Post Attack Command Control system (PACCS). The EC-135s are capable of assuming direction of SAC's bomber and missile forces if the underground command center is destroyed. In the latter stages of GLOBAL SHIELD, returning aircraft are recovered and serviced at their regular home bases. In a wartime situation, alternate reconstitution bases could service returning aircraft if their home stations were unavailable.

Catching my breath, I pondered, "Could it be that the big picture contained only ops and maintenance people? Surely not." I looked closer. While the most visible part of GLOBAL SHIELD is the activity of SAC's aircraft, the exercise encompasses many other facets vital to accomplishing SAC's mission.

SAC personnel at each base participate in disaster preparedness, security and communications exercises designed to evaluate plans and procedures in those critical areas. Disaster exercises test our ability to respond to, manage, and recover from aircraft accidents and other emergency situations, while we continue to perform assigned wartime missions. Security exercises during GLOBAL SHIELD allow us to evaluate our procedures for countering terrorist groups and other threats to SAC bases and weapon systems. Communications exercises enable us to train our people and evaluate our ability to operate in the type of communications environment likely to exist in a war.

The big pictue was finally real. My quest was over. As I put the book down, my mind was filled with visions of SAC testing plans and procedures for employing the command's missiles and aircraft, just as we would respond to an actual attack on the United States; of training SAC people in a simulated wartime environment; gathering information to improve plans; motivating everyone by showing them the importance and interrelationship of their jobs and developing commandwide teamwork. I saw it all so clearly. GLOBAL SHIELD helps increase the overall readiness and effectiveness of SAC forces. I thought I heard the voice of George Peppard as Colonel Hannibal Smith, A-Team Commander, gleefully declaring, "I just love it when a plan comes together."

I left the cloakroom dazed — wandering through the halls, turning the material over and over in my mind — looking at the many facets of this revelation. Now I realized GLOBAL SHIELD is not just another exercise, designed by some staff fiend to harass poor, innocent SAC personnel. Instead, I now saw that I was — that everyone — is a vital contributor to the big picture. There it had been every year for me to see — to experience — my role and the teamwork necessary to perform SAC's mission. My "mountain top" experience had been rather unnerving. As I awoke from my reverie, I found myself in the cafeteria. The hot, bitter coffee I suddenly realized I was sipping returned me to reality. I began to pick up bits and pieces of a conversation at the table behind me.

I thought I heard the voice of George Peppard as Colonel Hannibal Smith, A-Team Commander, gleefully declaring, "I just love it when a plan comes together."

"I tell you I saw it." I heard an unfamiliar voice saying, "It does exist. There, in a back room of the plans shop, hidden behind a giant picture of an MX . . . there it was."

"The future of the command?" another voice asked.

"Yes, it looked kind of like a road map," the first voice replied.

"Oh no!" I thought. "Another **big picture**? Could there be more than one?" I think I'll follow them and see.

What Every Crew Member Should Know About WIND SHEAR

CROSS CHECK
SIFC

SIFC, Castle AFB

The term "wind shear," to the average crew member, has taken on the same connotation as the word "thunderstorm;" that is, a weather phenomenon that must be avoided at all costs. And with all the adverse publicity old Mister Wind Shear has had in the last few years, it's a wonder that more flying restrictions haven't been imposed. For example, avoid areas of suspected or reported wind shear by ten nautical miles. Unfortunately, if such a restriction were to be published in AFR 60-16 or SAC Sup 1, we would most likely have to cancel more than half our flying.

With all the attention wind shear has been receiving, it is time that all of us

What Every Crew Member Should Know About

know what types of shears are hazardous to flight operations. Unfortunately, sometimes a little knowledge is worse than none at all. SIFC has had reports that pilots recently armed with a 30-minute wind shear brief, are suddenly calling "wind shear," whenever the INS groundspeed is 10 or 15 knots different than tower-reported winds. Granted, this may be a wind shear, but it is not necessarily hazardous. Remember Aesop's fable of the shepherd boy and the wolf. With this in mind, let's try to find out, in three main points, when you really do want to cry "wind shear" and think about going somewhere else.

First, let's define wind shear. For you mathematicians, wind shear can be defined by six scalar equations, three translational and three rotational (mercifully omitted here-Ed). For the other 99% of us, wind shear is any change in windspeed and/or wind direction over a short distance or (short) time frame with respect to an earth reference. Note that we have not mentioned anything about altitude. That means that wind shear can (and does) occur at any altitude. The jet stream, for instance, often produces significant shear. Although such shears might cause turbulence, they are not hazardous (the aircraft is not transmuted into small pieces of scrap aluminum).

What can be hazardous, however, are shears at low altitude, say below 2000 ft AGL (AFM 51-12). Let's call this low level wind shear. What concerns us is when the wind vector speed changes faster than the airplane can change speed, causing the groundspeed and IAS to change at different rates. That is, the wind speed is changing at 4 knots per second but the airplane can only react at 2 knots per second. Don't jump to the conclusion that all low level wind shears are hazardous, however. Many factors enter into the equation, not the least of which is the pilot's ability to recognize and react to the shear.

"In real aviator language, even a pilot with the right stuff, who doesn't eat quiche, will buy the farm if he attempts to fly head-on through an average microburst wind shear."

Second, let's look at what produces low level wind shear and more specifically, hazardous wind shear. Low level wind shear is produced by a myriad of weather and/or topographical (natural and man-made) situations. Fortunately, most of these shears are not extremely hazardous. In fact, only two weather situations have produced all but one of the wind shear accidents; convective activity and fronts. Since 1964 there have been 36 major common carrier transport aircraft mishaps and incidents related to low level wind shear. It was raining when 33 of these occurred and a thunderstorm was in progress during 23 of them. In the three cases where rain was not falling, strong mountain wave activity during a snowstorm, unstable moist air and frontal shear were the weather systems producing the shear.

Research into the wind shear phenomena has resulted in the discovery of two important facts. First, the magnitude of frontal shear in all but the most severe shears **does not exceed** the performance capability of transport category aircraft. But, they often have exceeded the performance capability of the pilot due to lack of wind shear training. And second, the average microburst (convectively produced) wind shear **does exceed** the performance capability of a transport category aircraft (performance loss can be equal to the loss of two engines on a three-engine aircraft). In "real aviator" language: even a pilot with the right stuff, who doesn't eat quiche, will buy the farm if he attempts to fly head-on through an average microburst wind shear.

You more astute readers probably caught the new term in the foregoing paragraph: microburst, a strong downdraft which induces an outburst of damaging winds on or near the ground in an area of 2.5 miles or less. (See the following article for a discussion of this phenomenon. Ed)

That leads us to the final (and most important) point; how do I avoid becoming a wind shear statistic? The answer is two-fold: knowledge and proper training. Knowledge of weather conditions favorable for the formation of wind shear is vital, as is training in how to fly through the vast majority of wind shears (frontal, low level jet, orographic, sea breeze, etc.) that can be safely penetrated.

WIND SHEAR

Knowledge

Note that the weather phenomenon known as a thunderstorm has been cleverly left out of the article. Instead, we have used the term convective activity. This has been done purposely to avoid confusion (at least up to this point). For example, many crew members have come to the erroneous assumption that microbursts only occur during a thunderstorm. This is not necessarily the case. To produce a microburst, all that is required is convective activity that may or may not be a developed thunderstorm. The thunderstorm might be thought of as the **coup de grace** of convective development. In fact, isolated rainshowers (from convective clouds) often spawn relatively strong microbursts.

There are two types of convective development that meteorologists have found to be prime producers of microbursts:

High based cells (typically found over the High Plains such as in the Denver, Colorado area). Avoid operations when a rain shaft is present (rain may or may not be reaching the ground), the surface temperature is in excess of 80°F and the dew point spread is 40°F or more.

Small, rapidly developing cells. This type of activity is normally isolated and develops explosively, pushing all the moisture to the top of the cells. When scanned with aircraft radar, little if any contouring will be observed when flying at low altitudes, especially when close to the cells. Lack of other information (PIREP, LLWSAS warning, reported weather, etc.) can easily lead a crew into believing that all that lies between them and the runway is a small isolated cell.

Some fronts (and other wind shear producers) may also occasionally produce severe wind shear that should be avoided. The Boeing company windshear task force defined severe wind shear as that which produces airspeed changes greater than 15 knots, or vertical speed changes greater than 500 fpm below 500 ft. AGL. If such conditions are indicated by PIREPS or other sources, filing a TDY voucher would be an acceptable course of action.

"Wind shear is analogous to sharks in that there are three types; some you can eat, some you can't eat, and some that will eat you!"

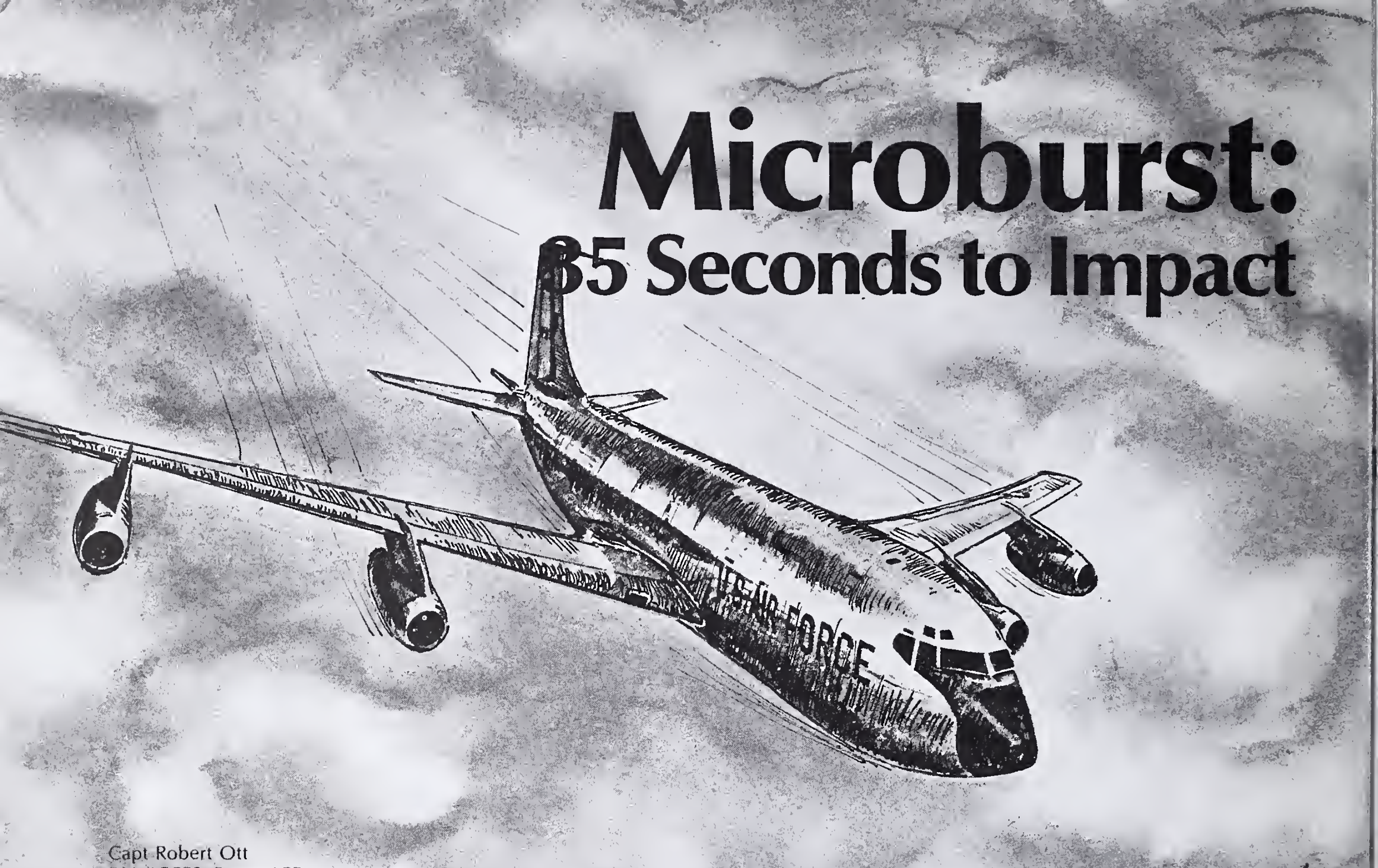
Training

Pilots need to know how wind shear affects the aircraft and what pitch and power responses are required to counteract the shear. Shears that can be safely penetrated involve horizontal wind flow only. They are typically described as increasing or decreasing performance and involve abrupt headwind to tailwind (or vice versa) changes in wind direction. Both types can result in a mishap if the pilot does not recognize and react correctly.

An excellent example of an increasing performance (tailwind to headwind) frontal wind shear mishap occurred at Boston on 17 Dec 1974. An Iberian DC-10 experienced a 27 knot change in the wind between 900 ft and 100 ft AGL. The winds switched from a 23 knot tailwind to a 4 knot headwind in 800 ft. The pilot (with unspooled engines) ran out of airspeed, altitude and inspiration, short of runway 33L at Logan International Airport. Fortunately there were no fatalities, but 16 people did sustain injuries.

Space does not permit an indepth analysis of the windspeed, groundspeed and pilot action relationships in the above accident. Let's just say that when a tailwind decreases faster than the aircraft's groundspeed, the power must be reduced to maintain an IAS. This is well and good, except that when the groundspeed slows (less tailwind), it will take more power and a higher pitch attitude to fly to the runway. AFM 51-12, FAA Advisory Circular 00-50A and Boeing's Jan-Mar 1985, issue of **Airliner** magazine provide excellent information on how to recognize and react to wind shear. Also, any SIFC graduate who has endured a grueling 2.5 hour course on wind shear, stands ready to answer your questions.

In summary, wind shear is analogous to sharks in that there are three types; some you can eat, some you can't eat, and some that will eat you! Only knowledge and training will prevent you from falling victim to the last category.



Microburst:
35 Seconds to Impact

Capt Robert Ott
509 AREFS, Pease AFB

"Low level wind shear (LLWS) has been identified as a major factor in several recent aircraft accidents. It was probably a factor in many more past accidents than was realized at the time. In response to this we are starting a program of issuing low level wind shear advisories (LLWSA) on 16 March 1978." (From an FAA newsletter used in Annual Instrument Refresher courses.)

Headline: 9 July 1982; Pan Am 727 crashes after takeoff in New Orleans killing all 145 aboard.

Headline: 2 August 1985; Delta L1011 crashes on approach to Dallas-Fort Worth killing 135 people.

These two disasters are only examples of recent aircraft mishaps that are now being attributed to wind shear. The question that remains is: why are such accidents still occurring if flight crews are being warned and trained to handle wind shears?

Recently, scientists have been looking into the phenomena of wind shear trying to answer this same question. What they have found is quite a surprise. Traditionally, flight crews have been taught that there are two types of wind shear: increasing headwind, and increasing tailwind. Recently, however, what scientists and researchers are discovering is an even more serious type which has been named a microburst. This new type of shear appears to be more serious than the others and leaves fewer choices for aircrew recovery techniques.

As we all remember from our annual instrument refresher course, wind shear can be identified by:

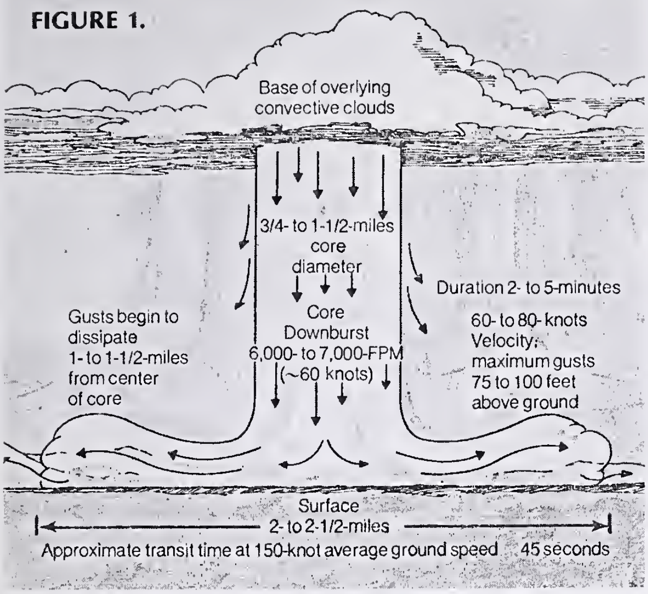
- rapid increase or decrease of IAS
- rapid change in drift
- once stabilized on approach, sudden changes required to heading or power setting, excessive sink rate, abnormal pitch changes required, etc.
- turbulence — almost always has wind shear associated with it; shear on the other hand frequently occurs without associated turbulence.

At high altitudes, the problems associated with wind shear do not really cause a serious threat to aircraft. The main problems occur during the critical takeoff and landing phases of flight. When the plane is low to the ground during these phases, any sudden change in aircraft altitude or attitude can have severe repercussions, as with the Pan Am flight in New Orleans which dragged a wing and cartwheeled into the trees. Studies have shown that aircrews, given the proper warnings, are usually able to safely recover their aircraft from a wind shear encounter.

The remainder of this article will look at the problems associated with recognizing microbursts and the lack of appropriate recovery techniques.

To fully understand the severity of this type of windshear, we need to take an indepth look into this phenomenon. A microburst can best be described as a downdraft of air localized to a very small area less than two and a half miles across. This small column of air approaches 70-100 mph in velocity and fans out in a

FIGURE 1.



Base of overlying convective clouds
3/4- to 1-1/2-miles core diameter
Duration 2- to 5-minutes
Gusts begin to dissipate 1- to 1-1/2-miles from center of core
Core Downburst 6,000- to 7,000-FPM (~60 knots)
60- to 80- knots Velocity; maximum gusts 75 to 100 feet above ground
Surface
2- to 2-1/2-miles
Approximate transit time at 150-knot average ground speed 45 seconds

circular pattern approximately 50-100 feet above the ground. These microbursts as depicted in figure 1, if located at the approach or departure end of the runway, can cause serious problems to an arriving or departing aircraft.

The major concern of an aircraft flying through a microburst is that in a short span of time the aircraft passes through an increasing headwind, vertical winds and then an increasing tailwind. Initially, when increasing headwind is detected, the pilot retards the power and lowers the nose of the aircraft to correct the adverse effects from the shear. The problem that arises is that about the same time the pilot has performed these corrections, the plane then enters the area of vertical wind. Once in this region, the flight crew is severely behind. The crew has just retarded power to compensate for the headwind and now is in a compound situation since an increase of power and pitch attitude is needed to compensate for the vertical wind. If the aircraft successfully transitions the vertical wind, the full effect of an increasing tailwind is then experienced. In both of the mishaps described above, the crew was unable to respond to these sudden changes because the magnitude of the shears exceeded the performance capability of the aircraft and crew.

Two questions arise. First, what measures can be taken by aircrews and ground controllers to prevent such accidents? Second, what new procedures or equipment need be developed to locate and warn aircrews of possible microbursts and their related hazards?

Research has been done by Tetsuya Theodore Fujita, from the University of Chicago, on the use of new radar designed to track these microbursts. This new radar called a Doppler radar appears to be very promising in the detection of microbursts. Based on the Doppler effect, this radar measures the rise or fall in frequency of a radar echo. Basically, what this radar indicates is whether the dust, rain, or other particles are moving toward or away from the antenna. Then, by examining the return on the screen for a tell-tale color pattern, a microburst can be detected.

Additional study by John McCarthy of the National Center for Atmospheric Research provided some valuable insight into how an aircraft responds to microbursts. Kevin McKean in his **Discover** article entitled "Solving the Mystery of Wind Shear," Sept '82, points out that McCarthy found "that a jetliner in flight, like a tuning fork, will oscillate if perturbed at just the right frequency." They calculated "that for a jetliner trimmed for landing, this resonant frequency is about one cycle every 35 seconds — meaning that headwinds and tailwinds that alternate in a 35-second cycle might yank a plane out of its flight path." And if you haven't already guessed, the time that it takes to fly through one of these microbursts is approximately 35 seconds.

Out of these studies has come research involving the Doppler radar. Called JAWS, for Joint Airport Weather Studies, this research used three Doppler radar stations, 48 ground-based instrument stations, and six instrumented aircraft including a U-2. The research site was at Denver's Stapleton airport, an area where microbursts seem to regularly occur. There were some significant findings. First, it was discovered that microbursts only last for a few minutes. Second, microbursts are not always caused by thunderstorms as

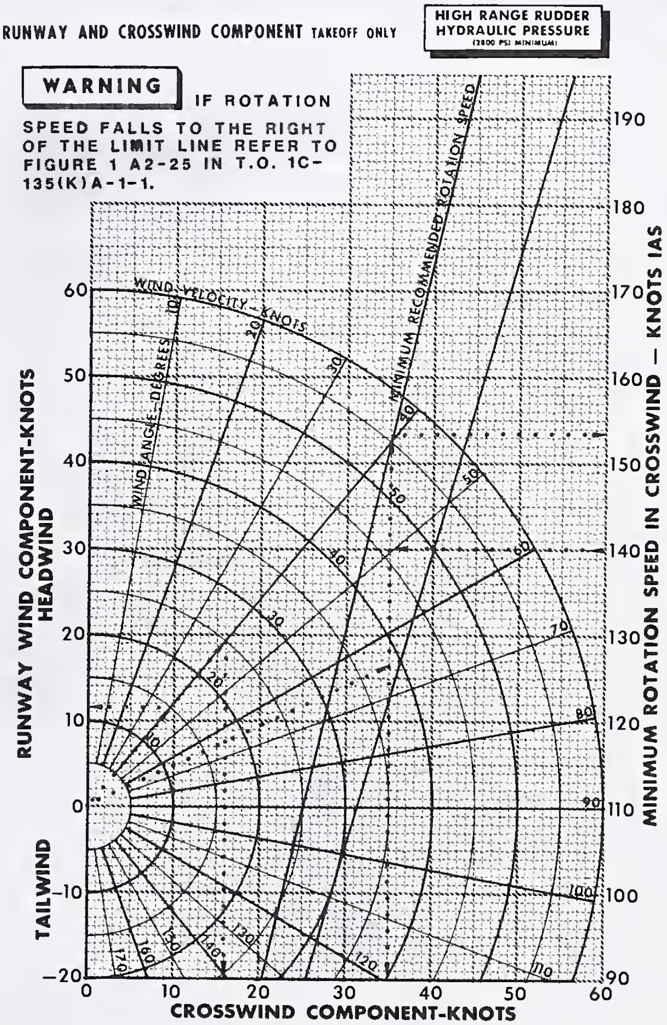


FIGURE 2

was thought. Instead, a weather phenomenon called virga caused some of the worst instances of microbursts. Virga is a weather condition in which falling rain at altitude evaporates prior to reaching the ground. This evaporation causes a cooling of the air which in turn causes the cooler air to fall through the warmer air setting up the downdraft associated with microbursts. McKean in his article was quick to point out that the scientists stress that not all areas may have the same type of microbursts; "We might find that dry areas like Denver have one type, while humid areas like New Orleans, Atlanta, and Chicago, have another."

The JAWS project also found that the LLWSAS alerting system is not capable of detecting microbursts. These systems basically monitor the wind direction and speed at various points around the airport. Since the microburst is so small and isolated these systems are not able to detect and give ample warning about microbursts.

The final point to consider is what aircrews can do to avoid flying through these microbursts, since it appears there is little an aircrew can do if they actually encounter one. During the JAWS research, when a microburst was discovered, the airport was closed for a short period until the shear condition passed. Judging by the severity of the accidents caused by wind shear in New Orleans and Dallas, this appears to be the best course of action.

There are however some other good procedures that may help aircrews avoid these conditions. Even though research shows that the most severe microbursts are caused by virga, there is also plenty of research that shows that thunderstorms can cause microbursts. The crash in Dallas is a prime example. The L1011 was on final approach to land during a thunderstorm with reported wind shear. Investigators now speculate that the crew was unable to recover from a wind shear encounter; a microburst. "The aircraft flew into a microburst for a duration of less than 40 seconds. During this period of time the headwind increased from 10 knots to a maximum of 24 knots in 5 seconds. The headwind was followed by vertical winds ranging from +500 fpm to -3000 fpm. The aircraft was in a severe downflow for 20 seconds. The 24 knot headwind sheared to an approximate 51 knot tailwind as the aircraft exited the microburst. This is the type of wind shear that must be avoided at all times." (From SIFC, Castle AFB.)

The policy on thunderstorm avoidance stated by the Air Force in AFR 60-16 and by SAC in SAC Sup 1 to AFR 60-16 is very clear and should provide the aircrews with the means of avoiding these shear areas caused by thunderstorms. To restate the SAC Sup to AFR 60-16:

"When approaching or departing an aerodrome in an area where thunderstorms are occurring or are forecast to minimize exposure to thunderstorm hazards:

(a) Try to maintain VMC

(b) Maintain at least 5 NM separation from heavy rainshowers and avoid thunderstorm activity by at least 10 NM below FL 230.

(c) Avoid areas of high lightning potential:

(1) Clouds within plus or minus 5000 ft of the freezing level

(2) Areas of heavy precipitation.

NOTE: Aircraft damage may occur 20 miles or more from any thunderstorm."

For decreasing performance (headwind to tailwind or decreasing headwind) wind shears, there is a technique that crews can use. This technique is commonly referred to as target groundspeed. Crews use a predetermined groundspeed to fly through areas of wind shear instead of IAS. The following example illustrates this technique:

RWY 34 REPORTED RWY WINDS 270/20
APPROACH SPEED 140 kts IAS
APPROACH WINDS 330/50

Using the Runway and Crosswind Component chart from the Dash 1, (see figure 2) the crew can compute the headwind and crosswind components. In this case the crosswind component is 19 kts and the headwind component is 7 kts. To compute the target groundspeed you would take the 140 knot approach speed and subtract the 7 knots of headwind and get 133. Once the crew has determined target groundspeed they should maintain an approach speed so actual groundspeed is equal to the target groundspeed. By doing this the pilot, upon entering a wind shear would only lose IAS back to his computed approach speed.

This technique gives the aircrew one more way of monitoring their flight conditions. When a crew becomes aware of a possible decreasing performance wind shear they should establish and monitor closely their target groundspeed. As they see fluctuations in IAS, they should avoid the temptation to reduce power.

Those of you checked out in the Fuel Savings Advisory/Cockpit Avionics System (FSA/CAS) will find that the computer calculates this target groundspeed for you and displays it on page 1/4 as reference groundspeed (REF GS). Right above this, the FSA/CAS displays the aircraft indicated groundspeed, allowing crews an easy means of comparing the two groundspeeds.

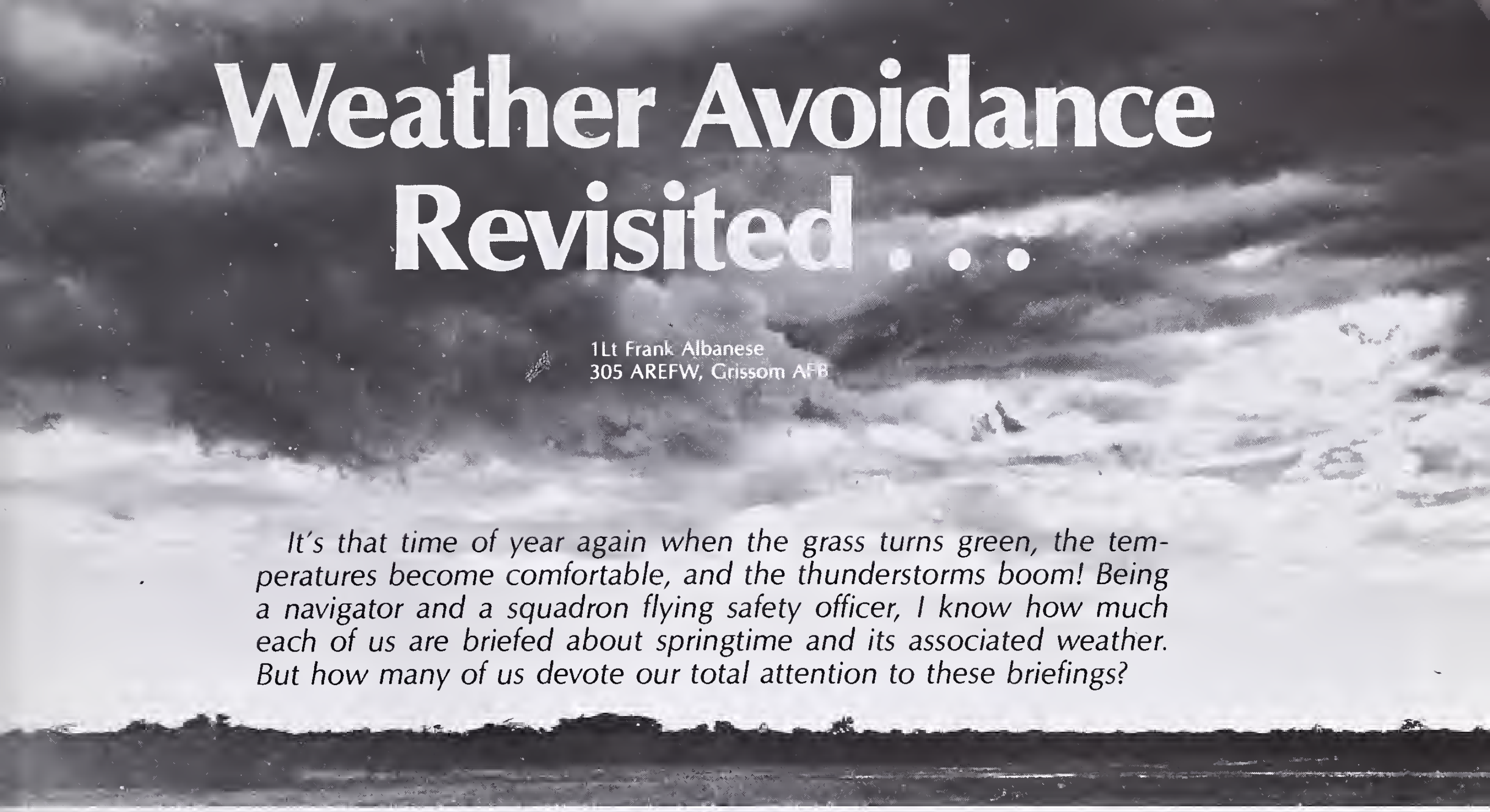
One final word on wind shear. In order for crews to be able to successfully avoid adverse wind shear conditions, everyone must help by reporting any abnormal wind conditions experienced on final or during takeoff. Crews should also remember to be specific when relaying wind information. They should include:

1) Altitude of the shear
2) Location of the shear
3) Observed aircraft indications of the shear
4) Remarks that may provide additional information
5) Winds if available

The following example can be used as a guide in relaying wind shear reports:

"Wind shear encountered at 300 feet 1 mile out on ILS FINAL runway 34. 25 knot decrease in IAS, right drift increased 8 degrees in 200 feet."

Take this discussion on microbursts to heart — let's not have any of SAC's aircrews fall victim to one of Mother Nature's most insidious traps.



Weather Avoidance Revisited . . .

1Lt Frank Albanese
305 AREFW, Grissom AFB

It's that time of year again when the grass turns green, the temperatures become comfortable, and the thunderstorms boom! Being a navigator and a squadron flying safety officer, I know how much each of us are briefed about springtime and its associated weather. But how many of us devote our total attention to these briefings?

In this article I'd like to cover a few considerations with respect to weather avoidance — those pertaining to planning and preflight and those pertaining to flight.

There is no better time to start thinking of weather than during mission planning. Although most of us have no choice of low level routes and air refueling tracks we will fly, we do have a choice in routes to and from these tracks (taking into account control times). A quick check with the weather shop on mission planning day may save you a bunch of heartaches in flight.

Pay particular attention to the premission weather briefing at base operations. Study the satellite photos and the charts and by all means, if you are unsure of something, ask questions. Take a quick look at their weather radar to see what your departure route looks like. Remember, thorough preparation on the ground does make a world of difference in flight. Other measures that will help: spend a bit more time while pre-flighting the radar. Use it to scout out your departure route if time permits and if any questions still remain unanswered, contact metro on the radio. Be confident in your decision either to wait it out or to go for it.

These are just a few considerations for weather avoidance on the ground. But what are the actual hazards in flight and what are some of the considerations for avoiding these hazards?

One of the most damaging aspects of thunderstorms is hail. Hail develops when the strong updrafts of the storm carry water droplets above the freezing level and the droplets freeze. This cycle continues until the ice crystals form ice "balls" and become too heavy for the updrafts to carry them. Then they get "spit out" from the tops or sides of the storm — one good reason not to fly near, above, or below a thunderstorm.

Another hazard associated with thunderstorms is turbulence. Turbulence, for the most part, is associated with the storm's building stages (updrafts and downdrafts). However, with some larger storm complexes, clear air turbulence has been experienced many miles from the storm complex.

Lightning is also one of those aspects of thunderstorms that could ruin your whole day. We all are very familiar with the dangers of lightning and those of us who fly tankers know the ultimate nightmare. One thing to remember: lightning strikes not only occur inside clouds and under clouds, but in cloud-free areas near the storms. Again, a good reason not to fly near a storm, and a good reason to adhere to our distance restrictions when circumnavigating weather.

Last but not least is the hazard of icing. You may think that icing is no longer a problem with our equipment today. True — if you avoid thunderstorms like the plague. However, if you happen to "accidentally" run into one, icing can be a major problem. Ice will build up faster than de-icing equipment can handle in storms, which can make for "interesting" flying conditions.

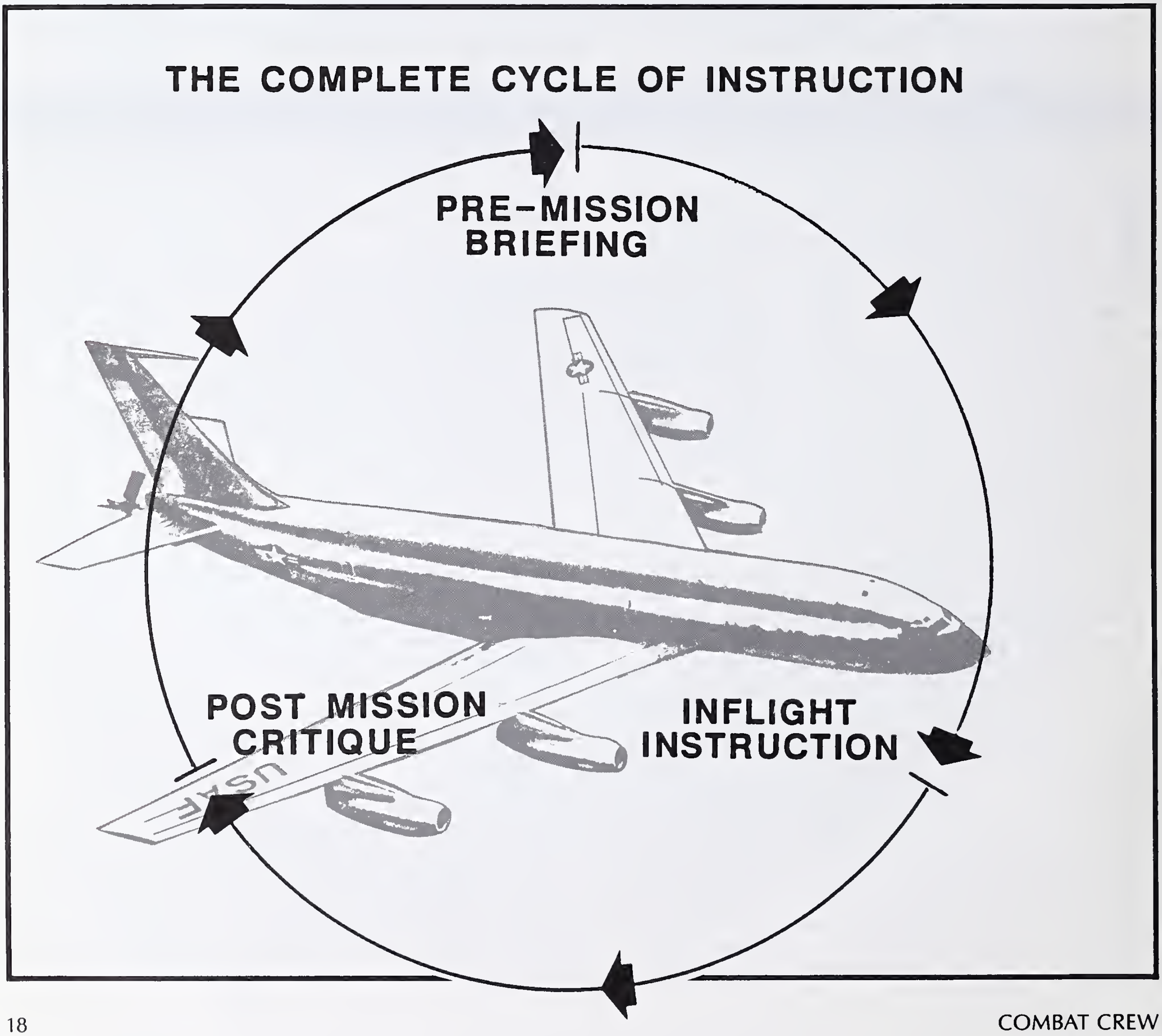
The final consideration in avoiding severe weather is attitude, not the aircraft's but yours, the crewmember's. All of us know how to do our jobs and usually perform them to the best of our abilities. However, I think we sometimes forget that we are mere mortals who take chances and make mistakes. Please keep in mind that there is a force out there stronger than almost any force man has harnessed, and its name is Mother Nature.

Keep a positive attitude in your abilities as an aviator, but give respect where respect is due. When confronted by a line of thunderstorms you don't think you can get around, turn for home and call it a day. There will be other days. No one will doubt a decision regarding the safety of the crew and aircraft!

CCI

Capt Robert B. Spangler
Castle AFB

At CFIC we use an acronym not usually found in the Air Force dictionary — CCI (the Complete Cycle of Instruction). Before any of you noninstructor types flip to the next article, please take a few minutes and allow me to share a few thoughts. After all, instruction should be an item of interest to everyone, from the commander to the least experienced crew member. Because the quality of air crew performance can be directly related to the quality of in-



struction given, it is imperative that everyone ensures that the quality of instruction remains at the highest level.

For those of you who are CFIC graduates, this article should serve as a refresher and give you the opportunity to evaluate the quality of instruction you are providing. For others, we want to provide the framework of the complete cycle and how it impacts your crew effectiveness — and safety.

The complete cycle consists of **premission briefing, inflight instruction** and **post mission critique.** This cycle should be familiar to all of you, because it is precisely the same schedule you trained under at CCTS. Few would argue the effectiveness of this cycle, but is it realistic in the "real Air Force?" Operational requirements and scheduling conflicts often prevent an instructor from spending as much time with a student that the complete cycle requires. All too often an instructor has just enough time to show up for the mission briefing, fly the mission and give a quick debrief while the crew finishes the paperwork. This should not happen nor be expected or condoned; and commanders and instructors should not allow it! The first noticeable effect of this "quick and dirty" approach will likely be a poor student attitude. Other effects include: frustration, uncertainty, indifference and demotivation — all impacting unit effectiveness and safety. It is the instructor's responsibility to keep these learning inhibitors to a minimum. By ensuring the cycle is completed, the instructor controls the learning environment and enhances the potential for fulfilling the student's needs.

The first phase of the cycle — premission briefing — involves thorough preparation for both student and instructor. The briefing provides a foundation on which the remainder of instruction can be based. This involves getting to know the student by reviewing all documentation available, such as training accomplishment and progress reports (TAPRs) and progress sheets. Preparation also entails personal involvement and establishing rapport with the student. The personal contact helps the instructor establish the student's knowledge level and gain insight as to what problems may be expected in flight. After a thorough prebrief, a single key word or phrase can trigger the correct response from the student, thus solving a problem or preventing it altogether. The personal contact also causes the student to be actively involved thereby minimizing or preventing the undesirable effects mentioned above. Further, it builds and reinforces more desirable factors such as confidence.

"After a thorough prebrief, a single key word or phrase can trigger the correct response from the student . . ."

The second phase is the actual inflight instruction. A thorough prebrief should eliminate the need for lengthy inflight discussion which may prove distracting, confusing and ultimately unsafe. Inflight instruction involves observation, guidance and assistance where necessary. Observation requires taking notes so the mission can be adequately reconstructed later. Although notes are essential, the instructor cannot allow note taking to distract him/her from observing and instructing the student. Another important consideration concerns the use of assistance or intervention. Generally, notwithstanding safety considerations, an instructor should allow a student to indicate a need for assistance before offering it. Students must be allowed to make mistakes and then be given the opportunity to correct them. Trial and error is an effective learning technique. However, this is often a judgment call. The instructor must maintain control over the entire situation. He or she must recognize the student's signal for help before frustration sets in and, above all, the instructor can never let the situation exceed his/her own limitations.

The last, but certainly not the least important phase, is the critique. In fact, many experts consider this the most important part of instruction. A properly conducted critique provides the perfect opportunity to further the rapport between instructor and student. The low stress environment enhances learning, however ample time must again be made available. Motivated students expect an honest appraisal of their performance which requires thorough preparation and presentation. The instructor should explain why certain procedures are used; not expect compliance because "that's the way it's always been done" or "because the regulation says so." Speaking of procedures, the instructor must be careful to differentiate between procedure and technique. The critique must be conducted with the student's feelings in mind. There is never room for ridicule or embarrassment. A good instructor will try to gain an understanding of why a student did something and then provide the instruction to correct mistakes. The critique should conclude with a recap of the student's performance, indicating areas requiring improvement, but just as important, highlighting strong areas. A little praise can do a world of good for the student's confidence and performance.

The strength of CCI is that it provides effective instruction before, during and after a flight. This prevents instruction being crammed into an eight hour-plus flight that can end up being too hectic for learning to take place.

The complete cycle of instruction is an absolute necessity if we are to produce the quality of combat crews that our mission requires. Whatever excuses are used for not providing adequate time for CCI, none justify a decline in crew proficiency. We recognize that the complete cycle cannot always be used, however, all of us who share the responsibility for instruction, either directly or indirectly, are obligated to make this cycle the rule, rather than the exception.

Stress: A Common Denominator

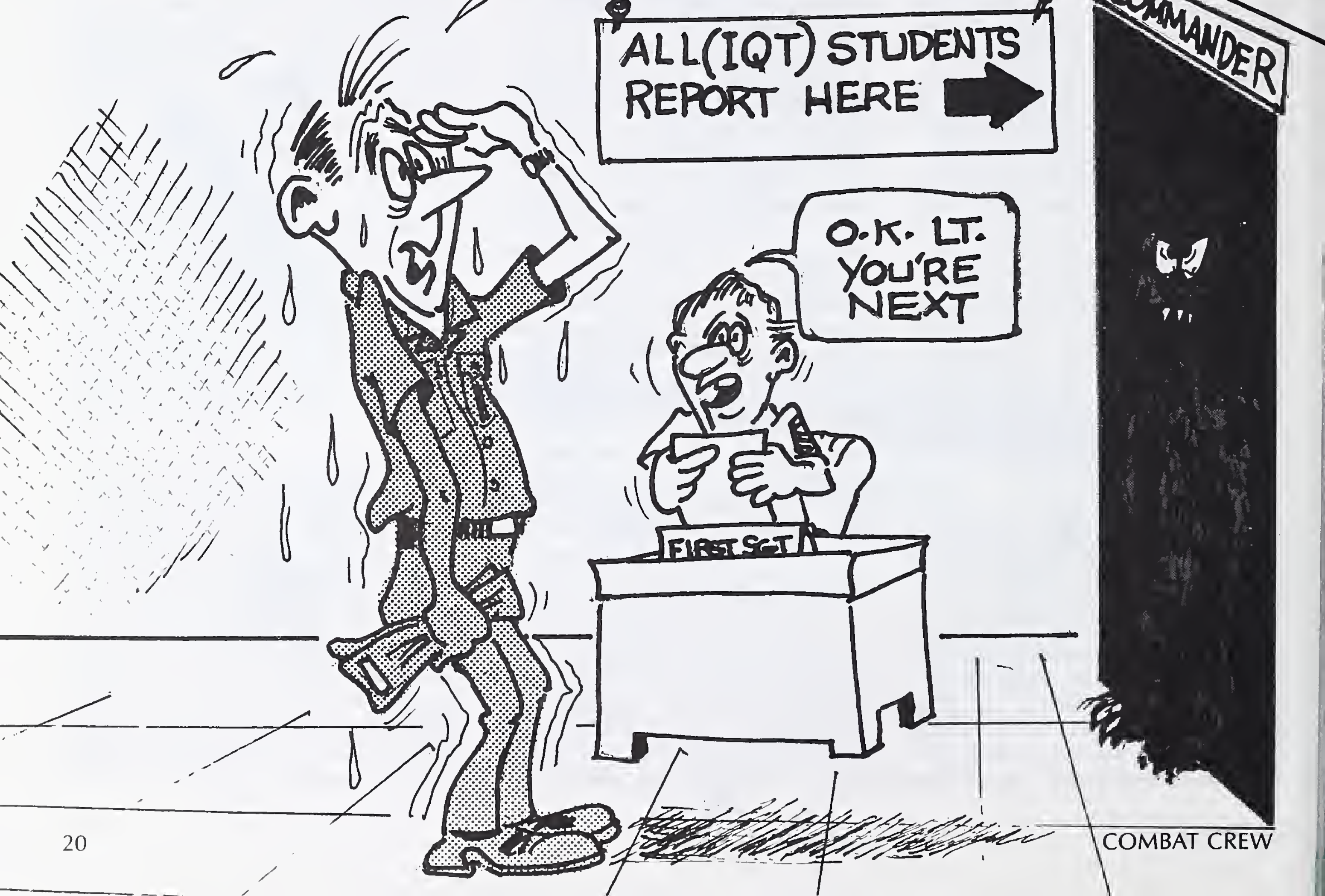
Capt J. Richard Garrett
4315 CCTS, Vandenberg

"Captain, I don't think I can take it anymore." Whether verbalized or not, many initial qualification training (IQT) students convey this message sometime during their preparation to become SAC missile launch officers. This message may well be an indication of a common malady throughout the Air Force: stress.

Among IQT students, stress arises from a variety of sources. A majority of our students are "brand new" second lieutenants. The 4315 CCTS is their first exposure to the day-to-day expectations of today's Air Force officers. Arriving at a new base, beginning a new career, and delving into a technically oriented course can be stressful for anyone — especially if you lack a technical background. Add these factors to the removal of familiar support mechanisms (home, family and friends), and the student is legitimately vulnerable to stress. Various forms of stress can adversely affect these students.

Imposed stress can play a significant role in the overall scenario. "I'm not cut out for a 'technical' job." "My degree is in eduation." "Sir, I wanted to fly." Attitude plays a tremendous part in stress management. By controlling our thoughts and emotions, we can better control our environment. The desire to excel, for example, is beneficial as long as expectations are reasonable. Striving to become a Distinguished Graduate is a lofty goal — if one is realistically able to attain it. Occasionally, regardless of the consequences the son or daughter of a senior officer feels compelled to excel so "Dad" won't be disappointed. Another student might indicate, "I am working as hard as I can, but I'm just not getting it." A perceived obstacle now obscures his goal, causing frustration. The resulting stress erodes motivation.

Other situations inducing stress are



more readily identifiable. The emphasis on weight control can be a very real concern for those of us who are constantly prepared for a "long winter." The long hours spent studying, sitting in class, and in the launch control center simulator conflict with personal needs, detracting from quality time required to maintain interaction with family members. All these factors can result in the "fishbowl effect;" the student feels the rest of the world is evaluating his performance — instructors, parents, family, friends and peers.

How then do we identify students under pressure? While the students are not certified under the Personnel Reliability Program outlined in AFR 35-99, we use the same types of behavioral change criteria to evaluate how each student is doing. The symptoms of stress are many and not all students exhibit the same behaviors. Some common indicators are: nervousness, loss of appetite, fatigue, sluggishness, depression, lack of concentration, short temper, sudden or unexplained changes in behavior, withdrawal from social contacts, and insomnia. Many people exhibit one or more of these symptoms occasionally, but when the adverse behavior becomes acute or unusually pronounced, a problem is likely to exist.

Okay, so people can suffer from stress. So what? Individuals are said to operate better under mild stress. However, unmanaged acute stress can cause mental lapses and insufficient attention to detail. Overlooking essential items involving task performance can jeopardize safe equipment operation. "Warnings," "Cautions," and "Notes" in technical orders are there for safety reasons. Personnel and equipment can be adversely affected by a momentary lapse of attention at a critical time. Additionally, a person under stress may be prone to risk taking, which has no place in the missile business.

At the 4315 CCTS, we strive to be sensitive to our students' needs and progress. The signs of stress are warning signals, signals of a student searching for a solution to a problem. In dealing with student problems, whether actual or perceived, it is paramount to remember they are individuals of worth. By being an active listener, sharing personal experiences, and enthusiastically assisting the student, much perceived stress can be vented or completely eliminated. Sharing perspectives about crew duty and the base of assignment is also helpful. Whether dealing with stress or preventing it, the two fundamental keys to success are: (1) being patient and (2) listening. While you can help another person learn to deal with stress, the ultimate responsibility for handling the situation rests with the individual.

Each person can do some activities to help manage stress. Proper diet and sufficient exercise are excellent ways to prevent or reduce stress. Taking time to "get away from it all" can have very positive results. Confiding in a family member, friend, commander, or chaplain may be sufficient for some while extreme cases may require medical attention.

By now you're probably asking yourself, "Why all this stuff about stress at IQT? I left there three years ago." Precisely the point. You are now in a bigger "fishbowl." Consistently high quality performance is the norm; you're dealing with real equipment during real alerts — performing an essential mission for the American people. There is no room for error. There are added stresses: recurring codes, Emergency War Order, and weapon system tests. Higher headquarters and local standardization evaluations tend to cause most crew members situational acute stress. Alerts are not normally conducive to personal/family life. Are you a candidate for stress overload? What are you doing about it?

Life's stresses will always be with us in varying degrees. How we choose to deal with stress, both in ourselves and those around us, can have a direct impact on how efficiently and safely we perform our mission. Remember — it is not the event that causes stress, but how you choose to respond to the event.

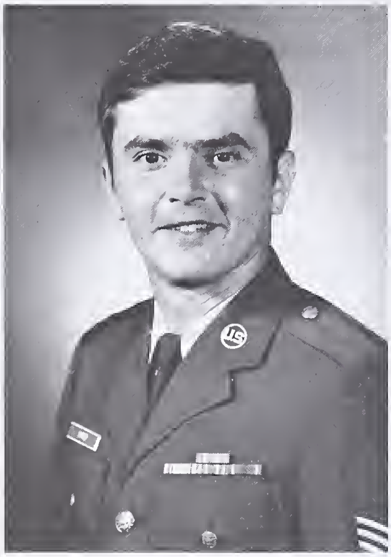
"FORTY & FORWARD . . ."

A B-50 from the 93d Bomb Group takes off from Castle AFB enroute to the United Kingdom. On 2 March 1949, a B-50 named "Lucky Lady" became the first aircraft to fly nonstop around the world. "Lucky Lady" departed Carswell AFB, flew 23,452 miles in 94 hours and one minute and landed back at Carswell.

PROFESSIONAL PERFORMERS

Aircraft Maintenance

TSgt David Olpere, 379 BMW, Wurtsmith AFB, is SAC's Maintenance Airman of the Month. When first assigned to the OMS Support Branch, Sgt Olpere was placed in charge of the -21 aircraft equipment section. In six short months he turned a marginal shop into the "Best in SAC," according to the SAC IG team. His knowledge of -21 equipment become known throughout the command and he was recently contacted by the maintenance supervisor of the CINCSAC aircraft to assist in the establishment of complete and accurate -21 equipment records. Due to his accomplishments in the -21 equipment section, Sgt Olpere was placed in charge of the nonpowered support equipment section. He completely revised the system of tracking equipment inspection times and intervals. The results were immediate — increased morale and a revised attitude towards the mission of the NPA section, along with better control of supply assets and tools. Sgt Olpere also devised a system of labeling and categorizing all excess equipment parts, resulting in less down time and minimum parts on order for equipment. The equipment out of commission for parts is the lowest it has been in years — a direct result of Sgt Olpere's hard work and dedication to duty.



Munitions Maintenance

Sgt David H. Matney, 7 BMW, Carswell AFB, is SAC's Munitions Maintenance Airman of the Month. Because of his versatility, demonstrated initiative and dedication to duty, Sgt Matney was selected to fill the critical number one man position on the loading standardization crew (LSC). While training and certifying with the air launched cruise missile (ALCM), Sgt Matney's LSC simultaneously trained and certified two additional munitions load crews on the short range attack missile (SRAM) and gravity munitions, enabling the 7 BMW to meet all required flow plan time schedules well ahead of SAC standards.

The LSC provided primary support to the Sandia National Laboratories personnel during the B-52H/ALCM/W-80 certification testing program conducted at Carswell AFB in July 1985. As the number one man, Sgt Matney directed all loading operations throughout the test program. The entire test program was completed a full day ahead of schedule and the LSC repeatedly received commendable praise from the test director for their professional attitudes and abilities. Sgt Matney's total dedication to duty and technical competence make him a true professional in every sense.

Flying Crew

Crew R-20, consisting of Capt Mark F. Sears, P, and Capt Robert E. Quick, RN, 509 BMW, Pease AFB, is SAC's Flying Crew of the Month.

During a recent Red Flag preparation mission, the crew was flying IR843 at 400 feet AGL and 540 knots. The weapon bay doors were opened for a simulated AGM-69A missile launch.

Following the launch, the weapon bay doors could only be partially closed. Additional attempts to close the doors either hydraulically or electrically were unsuccessful. The crew elected to slow the aircraft and began coordinating a rejoin with their wingman. Once they were joined up with the second FB-111, their wingman advised that there was hydraulic fluid streaming from the aft portion of the weapons bay. At this time Capt Sears noted that the utility hydraulic pressure was fluctuating from 500 to 3250 PSI. As the formation returned to Pease, the IP in the lead aircraft recommended they configure their airplane for landing and perform a controllability check. Capt Sears slowly swept the wings forward to 16° and lowered the gear handle. The nose gear successfully extended but the main landing gear would not. At this time the utility hydraulic pressure fell to zero, which placed the remaining primary hydraulic system in emergency isolation. The crew successfully lowered the main gear using the emergency landing gear extension checklist and configured the flaps and slats for landing. Once configured the utility pressure returned but fluctuated erratically. An orbit area was established and controllability checks performed.

As a result of a wet runway and the potential for hydroplaning and the possible loss of antiskid braking due to the hydraulic malfunction, the decision was made to make an approach end barrier engagement. With the tail hook lowered, Capt Sears accomplished a precision ILS approach to runway 34 at Pease in deteriorating weather conditions. The aircraft touched down on centerline, 600 feet before the cable and made a flawless engagement. Subsequent investigation revealed that the aft weapon bay door actuator had developed a major leak resulting in the rapid depletion of the utility hydraulic system fluid. The professional judgment and superb crew coordination displayed by Capt Sears and Capt Quick resulted in the safe recovery of a valuable aircraft.

Missile Crew

Split Crew E-130/R-174 consisting of 1Lt Raymond F. Chamberland, MCCC, and 2Lt Anthony Martignetti, DMCCC, 351 SMW, Whiteman AFB, is the SAC Missile Crew of the Month.

As Crew E-130/R-174 began their first alert together, they were immediately faced with an emergency situation. They detected an acrid, burning smell coming from the front of the launch control center (LCC). They immediately entered the LCC Fire/Overheat checklist and found the problem to be the Emergency Rocket Communications System (ERCS) Control Monitor (CM) console and electrically isolated the overheating element. After shutdown of the CM console, E-130/R-174 coordinated the realignment of squadron control and monitoring assignments. Their system knowledge of the ERCS and its associated technical data allowed them to identify an anomaly in the replacement equipment. They correctly analyzed abnormal test indications, reported their findings to Wing Job Control, and prevented extensive damage to ERCS resources. Additionally, Crew E-130/R-174 processed the emergency power and air procedure for a situation in the launch control equipment building and managed multiple commercial power failures at remote launch facilities.

Missile Maintenance

A1C Michael S. Resler, 341 SMW, Malmstrom AFB, is SAC's ICBM Maintenance Airman of the Month. His impressive achievements as a young airman make him stand out among his peers. An as electro-mechanical team technician he has never failed a code component test, keeping a 98.4% score average, putting him in the top three percent of all code testers. Airman Resler's technical knowledge and expertise have been demonstrated by his overall evaluation record. He has received four highly qualified grades out of his last nine evaluations while troubleshooting complex weapon system command and control faults. During a recent 3901 Strategic Missile Evaluation Squadron task evaluation, Airman Resler was awarded three qualified grades which helped contribute to his branch's overall excellent rating. His contributions to the maintenance effort during his short time at the 341st have been commendable and he deserves to be recognized as one of SAC's finest.

SAFETY CROSS FEED

Beginning this month "Safety Crossfeed" will feature an important safety message from another safety magazine not readily available to SAC crew members, or from past issues of Combat Crew. This month's feature comes courtesy of TAC Attack. — Ed.

UNTIL

SSgt Steven J. Schultz
366 TFW/SEG
Mountain Home AFB, Idaho

A couple of weeks ago during an office discussion of speed limits, I mentioned to my boss that I hadn't exceeded the 55 mph speed limit for over two years. Why? Because I felt that I was "due" for a speeding ticket and I wasn't going to give Ol' Smokey a chance at me. The boss was quick to counter with: "There's no such thing as being due. You either cause something to happen or you take the effort to ensure that it is not allowed to happen." Actually, I believe we were both right.

You see, one of the basic premises of safety is that mishaps don't just happen — no one is "due" for a mishap — they are caused. A speeding ticket and a mishap are analogous. After just consideration, my comment should have been: "I don't drive above 55 mph because I've exceeded that speed occasionally for ten years now and, having never been caught, I've been lucky." As we all know, everyone's luck runs out eventually. The same concept applies to unsafe acts or easy ways of doing the job: eventually one's luck will expire and an injury or property damage will be allowed to occur — *will be caused.*

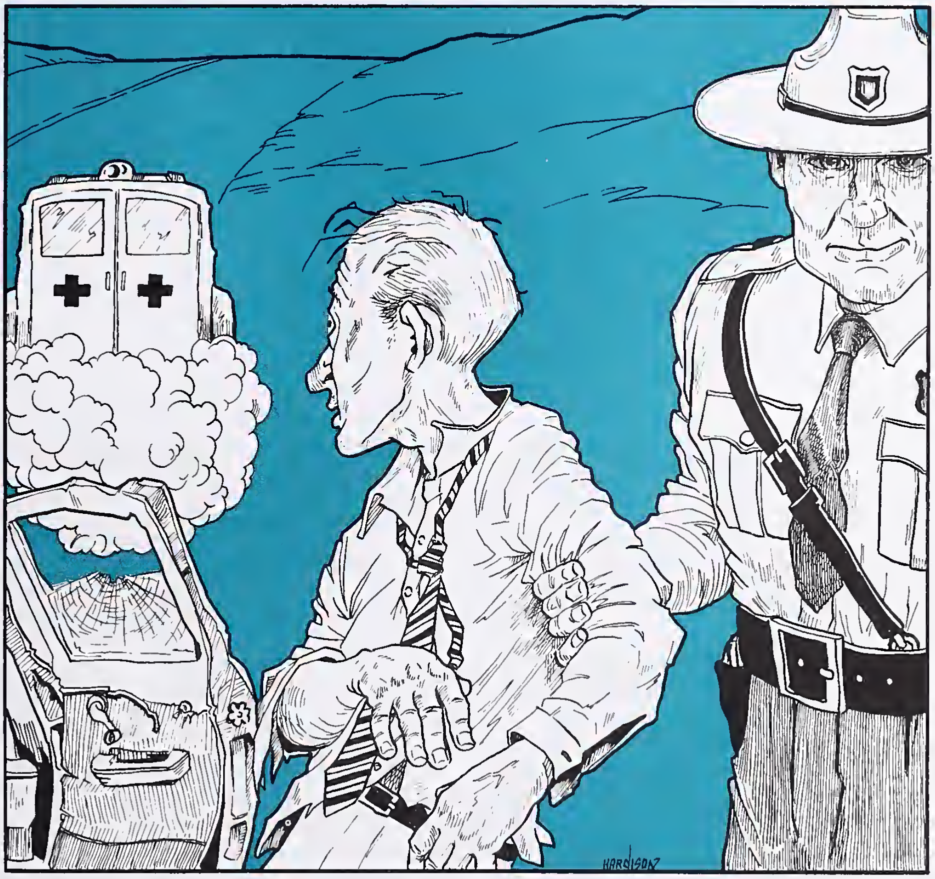
As a safety technician, I've been investigating mishaps on a daily basis for three years. During that time, I haven't investigated a single mishap that "just happened" or a mishap that was "just one of those things" (as I too frequently hear). I also haven't met anybody who was truly "due" for an unavoidable mishap. There's no one keeping a master log on each of us that says, "For every 1054 safe acts you perform, one mishap will come your way." Too often, we in the Air Force experience mishaps because someone presses their luck one time too often. How often is too often? No one knows for sure. Sometimes the hundredth is one time too many. Often, the first or second time is one time too many. The key, then, to mishap prevention is to deny that one chance the opportunity to occur.

Unfortunately, we don't. The human race is by nature a society of gamblers. We think of the internal joy we get when we outsmart the cops with our radar detectors or when we flip the checklist open only long enough for Safety or QA to pass by. And we say we'll do it "until I get caught."

Caught — to most of us that means when I get stopped for speeding or drinking and driving or when I get a DSV (detected safety violation) or when Safety writes me up for it. We think small, and never consider the Big Caught — when we kill ourselves, someone else or damage property. For each year Man occupies the planet, he becomes more convinced of his invincibility. Death and serious injury through mishaps are real and painful. It's not pretty and it doesn't always happen to someone else far away, as we like to think. Sometimes it strikes close to home. Consider the airmen who were servicing an aircraft with gaseous oxygen (GOX). Their failure to follow tech data allowed the aircraft to blow up and be destroyed. Or the high school chum of mine who got drunk and drove a car. He killed a woman and her child. He was lucky to receive only minor cuts and abrasions (or was he, considering his two manslaughter convictions and the unending guilt that confronts him every day).

Until I get caught . . . That's like the person who says, "I wear my seatbelt only on long trips because I'm exposed to a greater accident potential." That person overlooks two critical facts: (1) the majority of automobile mishaps occur within 25 miles of home, and (2) you might need your seatbelt only once, but which once?

Which "once" will be the unsafe act that causes a mishap? When will your "luck" run out? Is there such a thing as luck or is it the alibi of losers and people who have been caught? And why wait "until I get caught"? It's much easier to do the job correctly now than to try later to explain why I did it wrong or to face the consequences. It all comes down to two words we've all heard since Day One: attitude and responsibility.



I GET CAUGHT

Citation
To Accompany The Award Of
The Chief Of Staff Special Achievement Award

The chief of Staff Special Achievement Award is presented to the Strategic Air Command for outstanding flight safety accomplishments during 1985.

The Strategic Air Command reduced its Class A and Class B aircraft mishaps by 33 percent and 80 percent respectively over 1984. For the fourth year in a row, the Command's Class A mishap rate was below 0.9; and, for the first time in its history, the Command had no bomber mishaps. The men and women of the Command flew more than one-third of a million hours while performing demanding strategic bombardment, air refueling, reconnaissance, and airborne command post missions throughout the world.

The achievements of the Strategic Air Command exhibit high standards of safe mission accomplishment and reflect great credit upon the Command and the United States Air Force.

Charles A. Gabriel

Charles A. Gabriel, General, USAF
Chief of Staff

Shown with the award are: (L-R) Lt Col Don Hyman, Chief of Flying Safety Division; Brig Gen Lee Butler, SAC Inspector General; Col Chuck Wingert, SAC Director of Safety; and Maj Arv Taylor, flying safety division. Absent is Maj Bing Wepfer, also a member of the flying safety division.

SAC SAFETY SCREEN

71 AREFS, Barksdale Crew R-115: MP Capt Gregg A Frank, MC 1Lt Michael K Lane, IN Capt Douglas M Bass, MB A1C Pearl N Adams

32 AREFS, Barksdale Crew: MP Maj William J Splawn, MC 1Lt Jeffrey L Martin, ME MSgt Larry J Sheeley, MB TSgt Donald R Hess

22 AREFS, March Crew R-113: FP Capt Michael P O'Rourke, CP 1Lt Jeffrey A King, NN 1Lt Patrick J Littlefield, BO A1C Gary W Jennings

22 AREFS, March Crew R-123: FP Capt Neal Daugherty, CP 1Lt George M Lorenzo, NN Capt Rogers O Tyler, BO SSgt Carl S Seaberry

9 AREFS, March Crew F-63: AC Capt Phillip H McBride, CP 2Lt John R Podany, FE TSgt Gregory D Thomas, BO SSgt Michael A Chmiel

9 AREFS, March Crew A-13: AC Capt Peter C Leonard, CP Capt Glen D Ungaro, FE TSgt Timothy L Self, BO SSgt Stephen J Slobodnjak

1 SRS, Beale Crew S-01: IP Lt Col Bernard J Smith, IRSO Maj Dennis W Whalen

1 SRS, Beale Crew S-02: IP Lt Col Gerald T Glasser, IRSO Maj Ronald D Tabor

1 SRS, Beale Crew S-03: IP Maj James M Jiggens, IRSO Maj Joseph C McCue

93 AREFS, Castle Crew IT-56: IP Capt William J Holton, IN Capt Steven G Gamboa, IBO TSgt Ronald K Daugerty

93 AREFS, Castle Crew IT-10: IP Maj Charles A Brown, IN Capt Randy L Buckland, IBO TSgt Christopher D Sadler

924 AREFS, Castle Crew R-103: P Capt Anthony L Hinen, CP 1Lt John J Shelpman, N Capt Calixto M Garcia, BO TSgt Charles R Clift

328 BMS, Castle Crew IT-15: IP Maj Gregory N Armbrust, IRN Capt Charles M Vandenberg, IEW Capt Curtis W Ehman, IG TSgt Michael W Riggs

328 BMS, Castle Crew IT-36: IP Capt William W Pedeaux, IRN Capt Paul W Curtis, IEW Capt Mark D Garlow, IG TSgt John A Conner Jr

328 BMS, Castle Crew IT-43: IP Capt James P Barfield, IRN Capt James S Cole, IEW Capt Peter N Robinson, IG SSgt Scott A Demaster

24 SRS, Eielson Crew E-05: IP Capt William E Marr, CP Capt Robert A Nemeth, N-1 Capt James L Marsden, N-2 Capt Steve M Willard

24 SRS, Eielson Crew E-14: ITC Capt Michael J B Borja, R-1 1Lt Dale R Ekmark, R-2 2Lt Anthony J Hutfles, R-3 Maj John C Ruess, R-4 Capt Everett L Iler Jr, ET TSgt Marcus L Forbes, PT TSgt Carl R Woods

78 AREFS, Barksdale Crew: P Maj Paul McDermott, CP Capt Dan Decell, FE MSgt Tom Vines, BO SSgt Bill Fordyce

62 BMS, Barksdale Crew S-06: P Capt John C Burgess, CP Lt Douglas J Schaefferkoetter, CP Lt John P Hunerwadel, R Capt Robert D Davis III, N Lt Alan R Reynolds, EWO Capt Bruce R Beville, G SSgt Kim G Charles

596 BMS, Barksdale Crew R-74: MP Capt Samuel D Arrington, MC Capt Gordon George, MR Capt Mark W Rettele, MN 1Lt Paul L Yarian, ME 2Lt Richard A Piper, MG SSgt Alan W Turney

596 BMS, Barksdale Crew E-75: MP Capt John B Holbrook, MC 1Lt Anthony J Smith, IR Capt John A Branly, IN 1Lt James E Smith III, ME 1Lt Walter H Richert, MG TSgt Richard A Watson

38 SRS, Offutt Crew R-15: IP Capt Craig C Ebejay, CP Capt Jose R Pacheco, N1 1Lt Donald R Kelly, N2 2Lt Timothy C Spaeth

343 SRS, Offutt Crew E-54: R3 Capt Richard H Stotts, R2 1Lt David B Heininger, R1 Capt Glen E Gullekson

320 BMW, Mather Crew E-108: AC Lt Col Frederick E Scherschel, CP 1Lt Raymond A Kozak, N 1Lt James E Detemple, BO SSgt William F Shippey

320 BMW, Mather Crew S-101: AC Maj Eugene P Harmer, CP Capt Robert H Carr Jr, N Capt Deborah S Luper, BO MSgt John D Randall

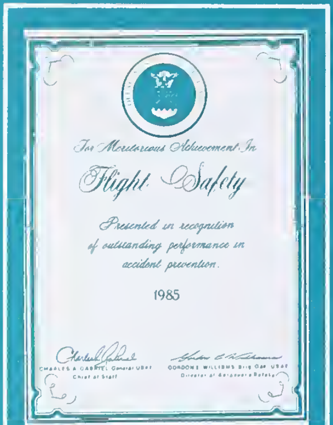
4018 CCTS, Dyess Crew Z-63: IP Maj Dave Holmes, IOSO Capt Dean Hodgson, IDSO Maj Bill McGraw

96 BMW, Dyess Crew S-101: EP Maj Michael P Ford, EC Capt Richard J Galiata, EN Capt Timothy G Vaughan, EB TSgt Eddie C Masten

96 BMW, Dyess Crew S-102: EP Capt Chris A Beaty, EC Capt Robin N Whybrow, EN Capt Gary A Hagler, EB TSgt Michael G Dunn

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR 127-2/SS1.*

1985
SAC AWARD WINNERS



For Meritorious Achievement In

Flight Safety

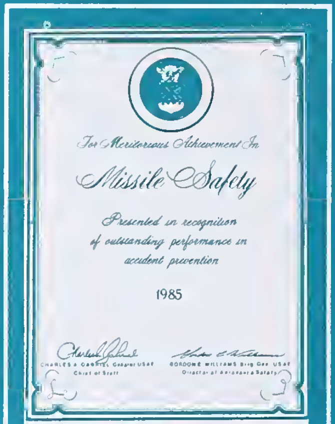
Presented in recognition of outstanding performance in accident prevention.

1985

CHARLES A. GABRIEL General USAF
Chief of Staff

GORDON E. WILLIAMS Brig Gen USAF
Director of Aerospace Safety

FLIGHT SAFETY



For Meritorious Achievement In

Missile Safety

Presented in recognition of outstanding performance in accident prevention

1985

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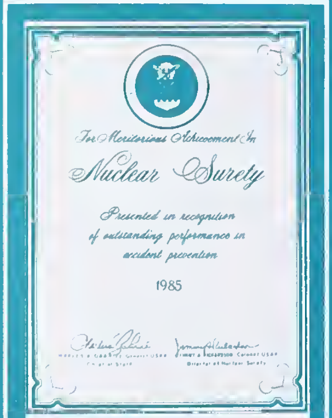
Chief of Staff

GORDON E. WILLIAMS Brig Gen USAF
Director of Aerospace Safety

MISSILE SAFETY



For Meritorious Achievement In

Nuclear Surety

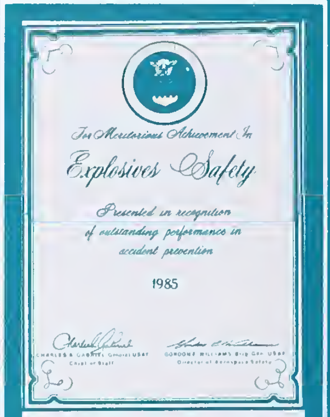
Presented in recognition of outstanding performance in accident prevention

1985

CHARLES A. GABRIEL General USAF
Chief of Staff

JIMMY A. [illegible] Colonel USAF
Director of Nuclear Surety

NUCLEAR SURETY



For Meritorious Achievement In

Explosives Safety

Presented in recognition of outstanding performance in accident prevention

1985

CHARLES A. GABRIEL General USAF
Chief of Staff

GORDON E. WILLIAMS Brig Gen USAF
Director of Aerospace Safety

EXPLOSIVE SAFETY

UNIVERSITY OF FLORIDA
3 1262 09683 5854

FLARE

FLYING SAFETY

- 2d Bombardment Wing
- 5th Bombardment Wing
- 92d Bombardment Wing
- 97th Bombardment Wing

MISSILE SAFETY

- 1st Strategic Aerospace Division
- 5th Bombardment Wing
- 90th Strategic Missile Wing
- 92d Bombardment Wing
- 308th Strategic Missile Wing
- 351st Strategic Missile Wing

EXPLOSIVES SAFETY

- 28th Bombardment Wing
- 42d Bombardment Wing
- 92d Bombardment Wing
- 410th Bombardment Wing

NUCLEAR SURETY

- 410th Bombardment Wing